研究生: 何嘉哲

研究生(英文姓名): Chia-Je He

論文名稱: 小型直流無刷風扇線上檢測系統開發

英文論文名稱: On-Line Diagnosis System Development for DC Brushless Fan

指導教授: 李達生

指導教授(英文姓名): Da-Sheng Lee

學位類別: 碩士

校院名稱: 國立臺北科技大學

系所名稱: 冷凍空調工程系所

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[摘要]

風扇運轉都會伴隨著振動，當振動過大時，則表示可能發生故障現象，對於風扇而言，在其發生故障時，若使用單動分析方法加以診斷，而每一種分析方式，皆有一定鑑別的特性。爲了能提高故障鑑別率，傳統典型的診斷是使用，再透過頻域信號作頻譜分析，然後交由專人或有經驗的工程師以時域或頻域兩組信號判斷發生何種故障及其可能方式轉換成在不需專人判讀的狀況下完成，讓產業達到自動化並節省成本。
本文旨在利用類神經網路中的「倒傳遞演算法」，來使得辨別風扇故障的方法能有所準則，且達到80%以上的辨識部零件部分故障，或者是外部外殼損壞或不全，皆能有所依循規則與依據，並藉由此方法使得風扇的生產過程能夠

[英文摘要]

Mechanical vibrations occur in the normal DC brushless fan working. The large magnitude vibrations may indicat line diagnosis system was developed to monitor the fan vibration and judge the failure conditions. Due to the con results can’ t give enough information for the experimental judge of the fan failures. The artificial neural network system to realize the automatic fan defects. The networks weighting was performed by the back propagation algo system can judge the DC brushless fan failures according to the vibrations spectra and the 80% hit rate can be a

[論文目次]

[參考文獻]

[1] W. S. McCulloch, W. Pitt, “A Logical Calculus of the Ideas Immanent in Nervous Activity,” Bulletin of Math

[2] L. A. Zadeh, “Fuzzy Sets,” Information Contr, Vol.8, 1965, pp. 338-353.

[3] D. E. Rumelhart, “Learning Representations by Back-Propagating Errors,” Nature, Vol. 323, 1986, pp. 533

[4] A. Fanni, A. Giua, E. Sandoli, “Neural Newtworks for Multiple Fault in Analog Circuits,” The IEEE Internati 1993, pp.303-310.

[5] P. V. Goode, M. Y. Chow, “Neural/Fuzzy Systems for Incipient Fault Detection in Induction Motors,” Proce

[6] M. Y. Chow, P. V. Goode, “Adaptation of a Neural/Fuzzy Fault Detection System,” Proceedings of Confer

[7] M. Y. Chow, “The advantages of machine fault detection using artificial neural network and fuzzy logic tech Conference on Industrial Technology, 1994, pp.83-87.

[8] R. Szczesny., P. Kurzynski, H. Piqueb., K. Hwan., “Knowledge-base system approach to power electronic s Symposium on Industrial Electronics, Vol. 2, 1996, pp.1005-1010.

[9] Z. E. Aygen, S. Seker, M. Bagnyanik, F.G. Bagnyanik, E. Ayaz, “Fault Section Estimation in Electrical Powe Transmission and Distribution Conference of IEEE, Vol. 2, 1999 pp.466 – 469.

[10] F. Filippetti., G. Franceschini., C. Tassoni., P. Vas, “Recent Developments of Induction Motor Drives Fault on Industrial Electronics, Vol. 47, No.5, 2000, pp.994-1004.

[11] Z. Ye., B. Wu., “A Review on Induction Motor Online Fault Diagnosis,” PIEMC 2000 Power Electronics a 1358.

[12] B. Raison, G. Rostaing, J. P. Rognon, ”Signal Processing Tools for Monitoring Induction Drive,” Industria Annual Conference of the IEEE, Vol.3, 1999, pp.1198-1203.

[13] G. Betta, C. Liguori, A. Paolillo, A. Pietrosanto, “A DSP-based FFT analyzer for the fault diagnosis of rotat Transactions on Instrumentation and Measurement, Vol. 51, No.6, 2002, pp. 1316-1322.

[14] X. Q. Liu, H. Y. Zhang, J. Liu, J. Yang, “Fault Detection and Diagnosis of Permanent-Magnet DC Motor ba IEEE Transactions on Industrial Electronics, Vol. 47, 2000, No. 5, pp. 1021-1030.

[15] S. Zhang, T. Asakura, X. Xu and B. Xu, “Fault Diagnosis System for Rotary Machines Based on Fuzzy Ne on Advanced Intelligent Mechatronics, Vol. 1, 2003, pp. 199-204.

[16] P. S. Heyns, W. G. Smit. “On-line vibration monitoring for detecting fan blade damage,” Proceedings of t 681-687.

[17] A. J. Oberholster, P. S. Heyns. “On-line fan blade damage detection using neural networks”, Mechanical 93.

[18] 蘇木春、張孝德 機器學習-類神經網路、模糊系統以及基因演算法則(二版)全華科技圖書股份有限公司 2002.